

# Information Sheet on Ramsar Wetlands (RIS)

Categories approved by Recommendation 4.7, as amended by Resolution VIII.13 of the Conference of the Contracting Parties.

## Note for compilers:

1. The RIS should be completed in accordance with the attached *Explanatory Notes and Guidelines for completing the Information Sheet on Ramsar Wetlands*. Compilers are strongly advised to read this guidance before filling in the RIS.
2. Once completed, the RIS (and accompanying map(s)) should be submitted to the Ramsar Bureau. Compilers are strongly urged to provide an electronic (MS Word) copy of the RIS and, where possible, digital copies of maps.

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### 1. Name and address of the compiler of this form:

World Wide Fund for Nature- India,  
Secretariat, 172-B, Lodi Estate  
New Delhi- 110 003  
Website: [www.wfindia.org](http://www.wfindia.org)  
Tel: 91(11)4616532, 4691760-62

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Designation date

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Site Reference Number

### With Inputs From:

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(e-mail: [ravindersood55@hotmail.com](mailto:ravindersood55@hotmail.com))  
Dr. Subash Gupta, Sr. Scientific Officer &  
Deepak Sethi, Project Associate.  
State Council for Science, Technology &  
Environment(H.P.), Shimla

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### 2. Date this sheet was completed/updated:

January 2004

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### 3. Country: INDIA

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### 4. Name of the Ramsar site: CHANDERTAL WETLAND

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### 5. Map of site included:

Refer to Annex III of the *Explanatory Note and Guidelines*, for detailed guidance on provision of suitable maps.

a) **hard copy** (required for inclusion of site in the Ramsar List): yes  -or- no

b) **digital (electronic) format** (optional): yes  -or- no

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### 6. Geographical coordinates (latitude/longitude):

32<sup>0</sup> 29' N, 77<sup>0</sup> 36' E

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### 7. General location:

Include in which part of the country and which large administrative region(s), and the location of the nearest large town.

Chandertal lake is one of the natural high altitude lakes in the Western Himalayas, situated near the Kunzam pass, which joins the great Himalayan and Peer Panjal ranges.

It lies in the upper Chandra valley with an outlet into the Chandra River, in the Lahaul & Spiti District of Himachal Pradesh State. Kunzam pass can be approached from the Rhotang pass (connected to state highway no-30) and from Kaza, district headquarter of Spiti (connected to highway). Chandertal lake can be approached from Kunzam pass (12 km) and from Batal on the Khoksar-Losar(Spiti) road (12 km) on foot.

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**8. Elevation:** (average and/or max. & min.)  
4337 m asl.

**9. Area:** (in hectares)  
49 ha.

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**10. Overview:**

Provide a short paragraph giving a summary description of the principal ecological characteristics and importance of the wetland.

Chandertal is a fresh water natural wetland of higher Himalayas located in cold arid climatic condition. The flora and fauna of the region has particular physiological and morphological features. Chandertal is an important site for migratory bird during summer.

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**11. Ramsar Criteria:**

Circle or underline each Criterion applied to the designation of the Ramsar site. See Annex II of the *Explanatory Notes and Guidelines* for the Criteria and guidelines for their application (adopted by Resolution VII.11).

1 • 2 • 3 • 4 • 5 • 6 • 7 • 8

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**12. Justification for the application of each Criterion listed in 11. above:**

Provide justification for each Criterion in turn, clearly identifying to which Criterion the justification applies (see Annex II for guidance on acceptable forms of justification).

**Criterion 2:** The Chandertal Lake supports endangered mammalian species i.e. Snow Leopard (*Panthera uncia*), Bobak Marmot (*Marmota bobak*), Royal's vole (*Alticola roylei*), Himalayan Ibex (*Capra sibirica hemalayanus*), Blue Sheep (*Pseudois nayaur*) in IUCN Red List and CITES. Chandertal Lake is of special value for its endemic plant and animal communities.

**Criterion 3:** Chandertal Lake is of special value for maintaining the genetic and ecological diversity of the region. The high altitude zone is a region of oxygen deficiency, low atmospheric pressure, excessive coldness and aridity and intense radiation. The flora and the fauna have specialized physiological and morphological features and their diversity is reflective of the alpine areas of the Western Himalayan ecosystem. It is a repository of unique biological diversity of this ecological zone (Plumpley Dominic, 1990).

Large variety of species is found in the wetland, which includes Snow cock (*Tetraogallus himalayensis*), Chukor, Black ring stilt (*Himantopus mexicanus*), Brahmi ducks (*Tadorna ferruginea*), Kestrel (*Falco tinnunculus*), Golden eagle (*Aquila chrysaetos*) and Chough (*Pyrrhocorax pyrrhocorax*). A large number of mammals are present in the catchment area of the lake like: Snow Leopard, Red Fox (*Vulpes vulpes*), Wolf, Ibex, Blue Sheep/Bharal *Pseudois nayaur* etc. are the common mammals of the area. In addition, to the mammals and birds, the region abounds in various insects during the summer season. The insect fauna consists of spiders, beetles, wingless grasshopper's butterflies and bugs. The margins of the lake abound in larvae of mayflies, stoneflies and caddis flies.

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**13. Biogeography** (required when Criteria 1 and/or 3 and /or certain applications of Criterion 2 are applied to the designation):

Name the relevant biogeographic region that includes the Ramsar site, and identify the biogeographic regionalisation system that has been applied.

**a) biogeographic region:**

1B, Trans-Himalayan--Tibetan Plateau

**b) biogeographic regionalisation scheme** (include reference citation):

Not available

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**14. Physical features of the site:**

Describe, as appropriate, the geology, geomorphology; origins - natural or artificial; hydrology; soil type; water quality; water depth, water permanence; fluctuations in water level; tidal variations; downstream area; general climate, etc.

Chandertal is a natural high altitude wetland uniquely placed along the ridge connecting the Great Himalayan and Peer Panjal ranges. It is outside the south – west monsoon regime because of the Peer Panjal ranges, yet it receives heavy winter snow fall and minor rain fall as it forms the upper extension of the Chenab valley. (S.V.Srikantia and O.N.Bhargava, 1998)

The geological importance of Lahaul and Spiti District lies in the fact that there is a complete sequence of geological formation dating from Precambrian to the Cretaceous with short breaks in the Upper Carboniferous and Jurassic period. Spiti shales consisting of shales with several layers of sandstone represent the Mesozoic era. The lake falls in the higher Himalayas, which is covered with glacier and snow for most of the part of the year. Glacier's erosive action is quite prominent which is visible through the presence of various geomorphological features i.e. hanging valleys, U-shape valleys & cirques etc.

Chandertal occupies a rock basin formed by the glacier scouring and depression which is later on filled with glacial melt. Lake is fed by the glacier melt water from the catchment area especially on its left bank. There is a regular out flow of water, which keeps on varying depending upon the season. Chandertal area is covered by glacial type of soil which is not fully developed. Lake is free from any human activity in the immediate vicinity and hence this fresh water lake is free from eutrophication. The turbidity is also very low.

The Chandra River bounds the lake to the north. Outflow from Chandertal Lake meets the Chandra River. The Chandertal area falls in the rain-shadow areas of Himalayas. The monsoon hardly penetrates and rarely reaches the valley in the form of misty drizzle. During winter season, precipitation occurs in the form of snow fall and mercury dips down to - 37<sup>o</sup> C to - 40<sup>o</sup> C.

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**15. Physical features of the catchment area:**

Describe the surface area, general geology and geomorphological features, general soil types, general land use, and climate (including climate type).

The Geology of the catchment area of this lake is unique as the Kunzum range encompasses geological formation ranges in age from Pre-Cambrian onward. (S.V.Srikantia and O.N.Bhargava, 1998)

The catchment area of this lake is formed by the Kunzam range which is covered with snow for most part of the year. About 65% of the catchment area is a degraded forest due to glacial action and seasonal grazing by migratory graziers. Rest of 35% of the area is covered by herbs and grasses like *Ranunculus*, *Potentilla*, *Delmias* and *Causines* etc.

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**16. Hydrological values:**

Describe the functions and values of the wetland in groundwater recharge, flood control, sediment trapping, shoreline stabilization, etc.

Chandertal wetland helps the reduction of flood in downstream as water moves into wetland faster than it moves out downstream part of the channel. Wetland also helps in the retention of moisture in the catchment and subsequently in the growth of grasses and herbaceous plants which protect the land against erosion in the summer season.

## 17. Wetland Types

### a) presence:

Circle or underline the applicable codes for the wetland types of the Ramsar "Classification System for Wetland Type" present in the Ramsar site. Descriptions of each wetland type code are provided in Annex I of the *Explanatory Notes & Guidelines*.

**Marine/coastal:** A • B • C • D • E • F • G • H • I • J • K • Zk(a)

**Inland:** L • M • N • O • P • Q • R • Sp • Ss • Tp Ts • U • Va •  
Vt • W • Xf • Xp • Y • Zg • Zk(b)

**Human-made:** 1 • 2 • 3 • 4 • 5 • 6 • 7 • 8 • 9 • Zk(c)

### b) dominance:

List the wetland types identified in a) above in order of their dominance (by area) in the Ramsar site, starting with the wetland type with the largest area.

**Vt, W, O, Sp, M, N**

## 18. General ecological features:

Provide further description, as appropriate, of the main habitats, vegetation types, plant and animal communities present in the Ramsar site.

The high altitude zone is a region of oxygen deficiency, low atmospheric pressure, excessive coldness, aridity and intense radiation. The fauna and flora have specialized morphological and physiological features to counteract or withstand unfavorable effects of extreme environmental conditions. The flora and fauna around Chanderal Lake is quite unique consisting of alpine vegetation. The alpine vegetation consists of the following species mostly matted with low herbs (Plumpley Dominic, 1990):

### **Rosularia alpestris**

*L. monocephalum*  
*G.pratense*  
*P.plurijuga*  
*Oxytropis humifusa*  
*Astragalus rhizanthus*  
*Cerastium cerastiodes*  
*Ranunculus spp.*  
*Rhodiola spp.*  
*B.vivipara*

### **Rheum spiciforme**

*Draba setosa*  
*Androsace spp*  
*Nepeta laevigata*  
*Aster spp.*  
*P.plebeium*  
*Gentianella moorcroftiana*

### **Leontopodium himalayanum**

*Geranium tuberaria*  
*Potentilla sericea*  
*Thymus linearis*  
*O.lapponica*  
*A.subuliformis*  
*Hedysarum cachemirianum*  
*Eritrichium nanum*  
*Bistorta affinis*  
*Artemisia spp*

### **R.webbianum**

*Primula spp*  
*Arabidopsis himalaica*  
*Saxifraga spp.*  
*Polygonum paronychioides*  
*Juncus thomsoni*  
*Waldheimia stoliczkai*

*Waldheimia stoliczkai*                      *Chaerophyllum reflexum*  
*Epilobium spp.*                              *Juniperus spp.*  
*Psychrogeton andryaloides*

The temperate and alpine biomass have an impressive list of species listed in the following section 20 including some red listed species as provided in Criteria 2.

### 19. Noteworthy flora:

Provide additional information on particular species and why they are noteworthy (expanding as necessary on information provided in 12. Justification for the application of the Criteria) indicating, e.g., which species/communities are unique, rare, endangered or biogeographically important, etc. *Do not include here taxonomic lists of species present – these may be supplied as supplementary information to the RIS.*

The Chandertal Lake and its catchment area come under the alpine zone which is characterized by the absence of trees. The herbaceous growth is remarkable for its variety. The important species are *Potentilla*, *Ranunculus*, *Acquilegia* and *Primula* species etc. The common grasses frequently met with are *Poa* and *Agropyron*. These grasses are rich in nutritive value.

Inside the lake no plants are seen or observed. This is a fresh water lake hence it is difficult to mention about the distribution of Macrophyton and Plankton etc in the lake. Alpine vegetation, loose scree & rocky areas of the Kunzam range dominate the catchment area of this lake.

### 20. Noteworthy fauna:

Provide additional information on particular species and why they are noteworthy (expanding as necessary on information provided in 12. Justification for the application of the Criteria) indicating, e.g., which species/communities are unique, rare, endangered or biogeographically important, etc., including count data. *Do not include here taxonomic lists of species present – these may be supplied as supplementary information to the RIS.*

The high altitude zone is a region of oxygen deficiency, low atmospheric pressure and excessive coldness. Others fauna species include:

#### Birds

<u>Common Name</u>	<u>Zoological Name</u>
1. Hoopoe	<i>Upupa epops</i>
2. Yellow Headed Wagtail	<i>Motacilla citrina</i>
3. White Wagtail	<i>Motacilla alba</i>
4. Grey Wagtail	<i>Motacilla cinerea</i>
5. Yellow billed chough	<i>Pyrrhocorax pyrrhocorax</i>
6. Red billed chough	<i>Pyrrhocorax pyrrhocorax</i>
7. Raven	<i>Corvus corax</i>
8. Jungle crow	<i>Corvus macrorhynchos</i>
9. Little brown dove	<i>Streptopelia senegalensis</i>
10 Blue rock pigeon	<i>Columba livia</i>
11 Snow Pigeon	<i>Columba leuconota</i>
12 Hill Pigeon	<i>Columba rupestris</i>
13 Common rose finch	<i>Carpodacus erythrinus</i>
14 Brandst mountain finch	<i>Leucosticte brandti</i>
15 Hodgson's mountain finch	<i>Leucosticte nemoricola</i>
16 Horned lark	<i>Otocoris alpestris</i>
17 Black (common) redstart	<i>Phoenicurus ochruros</i>
18 Hodgson's redstart	<i>Phoenicurus hodgsoni</i>
19 Short toed eagle	<i>Circaetus gallicus</i>
20 Lammergeyer vulture	<i>Gypaetus barbatus</i>
21 White backed vulture	<i>Gyps bengalensis</i>

22 Common sandpiper	<i>Tringa hypoleucos</i>
23 Green sandpiper	<i>Tringa nebularia</i>
24 Green Shank	<i>Tringa nebularia</i>
25 Kentish plover	<i>Charadrius alexandrinus</i>
26. Black winged stilt	<i>Himantopus himantopus</i>
27 Common teal	<i>Anas crecca</i>
28 Blue rock thrush	<i>Monticola solitarius</i>
29 Magpie robin	<i>Copsychus saularis</i>
30 Himalayan snowcock	<i>Tetraogallus himalayensis</i>

According to the report of Plumpley Dominic & Sharma Virinder (1990) a large number of mammals are present in the catchment area of the lake like:

<u>Common Name</u>	<u>Zoological Name</u>
1. Himalayan Marmot	<i>Marmota bobak</i>
2. Royal's vole	<i>Alticola roylei</i>
3. Himalyan weasel	<i>Mustela sibirica</i>
4. Mole rat	<i>Bandicota spp.</i>
5. Himalayan Ibex	<i>Capra sibirica hemalayanus</i>
6. Wolf	<i>Canis lupus</i>
7. Lynx	<i>Felix lynx</i>
8. Snow leopard	<i>Panthera uncia</i>
9. Himalayan fox	<i>Vulpes vulpes</i>

### **21. Social and cultural values:**

e.g., fisheries production, forestry, religious importance, archaeological sites, social relations with the wetland, etc. Distinguish between historical/archaeological/religious significance and current socio-economic values.

There is no permanent human settlement in the catchment area of wetland. However, from July to September the migratory grazers erect temporary shelters. There are no commercial units in the vicinity of wetland. Since the whole area is devoid of vegetation and human settlement, hence no area in the vicinity of lake is used for agriculture.

### **22. Land tenure/ownership:**

(a) within the Ramsar site: Forest Department, Government of Himachal Pradesh

(b) in the surrounding area: Forest Department, Government of Himachal Pradesh

### **23. Current land (including water) use:**

(a) within the Ramsar site: Nothing

(b) in the surroundings/catchment:

About 65% of catchment area is highly degraded due to glacial action and seasonal grazing by migratory graziers. Rest of 35% of the area is covered by herbs and grasses like Ranunculus, Potentiala, Delmias and Causines etc.

### **24. Factors (past, present or potential) adversely affecting the site's ecological character, including changes in land (including water) use and development projects:**

(a) within the Ramsar site:

The anthropogenic interference with the lake ecosystem is seasonal (summer) through visits by trekkers and tourists from Batal, Kunzam or Baralache pass routes. During the tourist season a large number of visitors pollute the water quality of the lake by leaving garbage after camping. This adds toxicity to the marine life (Pisciculture) as the camping spot on the alpine meadow at the northern end drains into the lake (Sharma Virinder & Sethi Deepak, 2000).

(b) in the surrounding area:

The nomadic herdsmen pass through the Chandra valley with huge flocks of sheep and goats graze the meadows. The whole Chandertal and its catchment area are grazed heavily by migratory grazers every year. The combined effect of the visitors and herdsmen does contribute to increased siltation and organic influx into the lake.

Due to the historical and tourism importance of the lake, the construction of a road was undertaken during 1985- 86. The road construction has been stopped now for the following reasons:

- The whole catchment of the lake is fragile and susceptible to ecological degradation because of the geology and sparse vegetation.
- The road would be in use for only three months and will not serve any local population.
- A good trekking path has been constructed by the Forest deptt. from kunzam pass to the lake.
- The increased tourism activity will result in generation of solid waste and dumping, which would in turn affect the water quality of the lake.

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### **25. Conservation measures taken:**

List national category and legal status of protected areas, including boundary relationships with the Ramsar site; management practices; whether an officially approved management plan exists and whether it is being implemented.

The Ministry of Environment and Forests, Government of India in 1994 declared Chandertal as wetland of National Importance. Since then, Ministry has been providing funds for its conservation and management. State council for Science Technology and Environment has been designated as a Coordinating Agency for this Programme.

Under this Programme, following activities have been completed

- Prepared a map of Chandertal and its catchment on 1:1000 scale with contour interval of 1m.
- Constructed garbage disposal pits for disposing waste generated by the tourism activities.
- Putting signboards carrying the message on Environment conservation in the Chandertal Area.
- Organised awareness camps for the local people and tourists.
- Initiated Catchment treatment measures.

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### **26. Conservation measures proposed but not yet implemented:**

e.g. management plan in preparation; official proposal as a legally protected area, etc.

- Identification of suitable Camping sites for tourists
- Construction of walking trail
- Installation of prefabricated shelter for Environment Interpretation Center.
- Extensive biodiversity research is required to be taken in this area.
- Regular water quality monitoring of the wetland.

**Vegetation:** The most part of the wetland is devoid of any vegetation. The research inputs into this area are nil hence almost no base line information exists. Secondly due to the absence of any tree or

bush species in the area it is very difficult to select the plant species for conservation purpose. It is very difficult to introduce any exotic species in the absence of any indigenous species.

**Impact of grazing:** monitoring needs to be done throughout the year.

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**27. Current scientific research and facilities:**

e.g., details of current research projects, including biodiversity monitoring; existence of a field research station, etc.

Zoological Survey of India is undertaking the faunal survey of Chandertal area. Geological Dept. of Punjab University is carrying out the Geological study of the area. Apart from this, Tyne Himalayan Expedition 1989, University of Newcastle has covered the ecological features of the Chandertal wetland.

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**28. Current conservation education:**

e.g. visitors' centre, observation hides and nature trails, information booklets, facilities for school visits, etc.

Organised awareness camps with the participation of local people in the surrounding area. Resource material i.e posters, brochures have been produced for distribution amongst various stakeholders.

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**29. Current recreation and tourism:**

State if the wetland is used for recreation/tourism; indicate type(s) and their frequency/intensity.

This lake remains closed from October to June due to heavy snowfall in the area. A Large numbers of tourists visit this wetland every year from July to September. Basic tourist facilities like camping ground, trail, and public sanitation facilities are lacking in the area.

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**30. Jurisdiction:**

Include territorial, e.g. state/region, and functional/sectoral, e.g. Dept of Agriculture/Dept. of Environment, etc.

Divisional Forest Officer, Spiti is the custodian of the wetland & its catchment as the entire area is under Forest Department (Government of H.P.)

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**31. Management authority:**

Provide the name and address of the local office(s) of the agency(ies) or organisation(s) directly responsible for managing the wetland. Wherever possible provide also the title and/or name of the person or persons in this office with responsibility for the wetland.

Ministry of Environment and Forests, New Delhi, Government of India has designated State Council for Science, Technology and Environment as a Coordinating Agency for the Conservation and Management of Chandertal Wetland. Various implementing departments/agencies like Forest Division, Spiti, Publicity Division (Forest Deptt), Geological Wing and local Administration are involved in this Programme.

Chief Conservator of Forests (Wild Life),  
Himachal Pradesh.  
Mist Chamber, Khalini, Shimla - 171002.  
Tel. (0177)-2623038.

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**32. Bibliographical references:**

scientific/technical references only. If biogeographic regionalisation scheme applied (see 13 above), list full reference citation for the scheme.



- Srikantia, S.V. and Bhargava, O.N.1998. Geology of Himachal Pradesh, Geological Society of India pp-26-27.
- Gopal, Brij. 1995. Hand Book of Wetland Management prepared and produced by World Wide Fund for Nature.
- Sharma, Virinder & Sethi, Deepak. 2000. Chandertal wetland: Conservation and Management, National Consultation, Conservation of High altitude wetlands ,WWF
- Plumpley Dominic & Sharma Virinder. 1990. A report from the University of Newcastle upon Tyne Himalyan Expedition, World Pheasant Association Newsletter.

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